

PATENT SPECIFICATION

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DRAWINGS ATTACHED

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(54) IMPROVEMENTS IN OR RELATING TO THE MOUNTING OF VEHICLE REAR VIEW MIRRORS

(71) We, DESMO LIMITED, a British Company of 45 College Road, Perry Barr, Birmingham 22b, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to rear view mirrors for vehicles and is particularly concerned with the mounting of such mirrors on the vehicle.

The present invention consists in a rear view mirror comprising a base, which includes a skirt forming the periphery of the base, and a mounting member adapted to be secured wholly on the outside of a suitable surface of a vehicle, the base being arranged to house and to conceal substantially the mounting member within the skirt, attachment means being provided by which the base is adapted to be attached to the mounting member, the attachment means allowing of readily detachable mounting of the base on the mounting member and comprising a two part attachment between the base and the mounting member, the first part attachment providing in use locating engagement between the base and mounting member and the second part locking engagement between the base and mounting member, the locking of which also locks the locating engagement, the first part attachment being such that it prevents when engaged, removal of the base from the mounting member solely by relative movement between the base and the mounting member along a path substantially normal to the portion, adjacent the attachment, of the surface of the mounting member adapted to abut the surface of the vehicle or to a plane tangential to that portion.

The locking engagement may be tightenable and such that when it is being tightened it causes relative movement between the base and the mounting member.

When the mirror is mounted on the body of a vehicle, for example on the wing of a vehicle, the arrangement of the attachment means may be such that when both engage-

ments of the attachment means are locked the base is attached to the mounting member and relies solely for support on that attachment. Such arrangements will hereinafter be referred to as of the first type.

Alternatively the arrangement of the attachment means may be such that when both engagements of the attachment means are locked the base abuts the surface of the vehicle to which the mounting member is secured and is thus supported. Such arrangements will hereinafter be referred to as of the second type.

In arrangements of the second type a gasket may be interposed between the abutting surfaces of the base and body of the vehicle to minimise damage to the surface of the vehicle.

The locating engagement may comprise a cam and follower, the cam being provided on one of the base and mounting member and the follower being provided on the other, the arrangement being such that a component of the relative movement between the base and mounting member is translated by the cam and follower of the locating engagement to cause the base to move relative to the mounting member towards a position where the mounting member is substantially within the skirt of the base.

In an arrangement of the first type locking of the locking engagement and thus of the locating engagement may be arranged to occur when further movement of the base towards the mounting member (that is to say, towards a position in which the mounting member is substantially within the skirt of the base) is prevented by the engagement of a part of the mounting member with the base.

In an arrangement of the second type locking of the locking engagement and thus of the locating engagement may be arranged to occur when the skirt of the base abuts the surface of the vehicle.

The cam of the locating engagement may be formed with a plane surface.

The locking engagement may comprise a locking screw which engages in a screw threaded hole formed in one of the base and

the mounting member and has an abutting engagement with the other.

In an arrangement of the second type in which the locating engagement comprises a cam having a plane surface and the locking engagement comprises a locking screw, the axis of the locking screw may be advantageously arranged to be parallel to the plane surface of the cam of the locating engagement so that on tightening of the locking screw the base moves towards the surface of the vehicle on which the mounting member is secured and its lower face remains parallel to the surface of the vehicle during this movement.

Where the base of the rear view mirror is of elongate form, the locking engagement may be provided at its one end and the locating engagement may be provided wholly within that half of the length of the base which includes the other end.

Embodiments of the invention will now be described, by way of example, with reference to the accompanying drawing in which:—

Figure 1 is a part-sectional side view of part of a rear view mirror according to the invention.

Figure 2 is a perspective view of the part of the mirror shown in Figure 1.

Figure 3 is a part-sectional side view of part of a further embodiment.

Figure 4 is a view similar to Figure 3 showing a part of another embodiment.

Figure 5 is a view similar to Figure 3 showing a part of yet another embodiment.

Figure 6 is a view similar to Figure 3 showing a part of a further embodiment.

Figure 7 is a view similar to Figure 3 showing a part of yet a further embodiment.

In the following descriptions of mirrors according to the invention the terms "upper" and "lower" are used in reference to the disposition of the mirrors as shown in the drawings in which they are shown mounted, for exemplary purposes only, on horizontal surfaces of vehicles.

The embodiment shown in Figures 1 and 2 of the accompanying drawings comprises a mirror head 10 attached to one end of a stem 11 which at its other end is supported by and is integral with a base 12. A mounting member in the form of a mounting plate 13 is provided which can be secured to the body of a vehicle at any suitable position.

The mounting plate 13 is of generally flat rectangular shape. At one end a portion of the plate 13 is bent up and over so that it forms an acute angle with the middle portion and thus forms a locating end 14 of the plate 13. At the other end a portion is bent up at right angles to the middle portion to form a locking end 15 of the plate 13, a screw threaded hole 16 being formed in this locking end 15 substantially at its middle.

The mounting plate 13 is secured to the body of a vehicle by means of two screws 17

which are passed through holes 18 formed in the middle portion of the plate 13.

The base 12 of the mirror is of generally hollow rectangular box form comprising a wall 19 from the middle of which projects the stem 11, and a peripheral skirt 20 the free edge of which corresponds in shape to the outline of the lower face of the base 12 opposite the wall 19. At its one end the base is formed with an integral portion 21 the lower face of which is set back from the lower face of the base 12 by a distance equal to or slightly greater than the thickness of the mounting plate 13. A recess 22 of generally rectangular section is formed in the portion 21 and opens to the lower face of the portion 21 at which the width of the recess 22 is slightly greater than the width of the mounting plate 13. The internal end wall of the recess 22 nearer the adjacent said one end of the base 12 is generally parallel to the external wall of said one end of the base 12, but the opposite internal wall of the recess 22 is inclined away from the said one external end wall of the base 12, being nearest at the lower face of the portion 21. The inclined internal end wall of the recess 22 forms an acute angle with the plane of the lower face of the base 12 substantially equal to the angle between the locating end 14 and the middle portion of the plate 13.

A clearance hole 23 for the passage of a locking screw 24 is formed in the skirt 20 at the other end of the base 12, the hole 23 being counterbored to receive the head of the screw 24.

In attaching the base 12 to the mounting plate 13 the base 12 is fitted onto the mounting plate 13 so that the locating end 14 is located within the recess 22 and mates with the inclined end wall therein and thus forms the locating engagement. The locking end 15 of the plate 13 is within the hollow box form of the base 12 and the relative lengths of the parts is such that a gap exists between the locking end 15 and the inside face of the skirt 20 at the adjacent end of the base 12. The locking engagement is formed by the locking screw 24 which is passed through the clearance hole 23 in the skirt 20 and engages in the screw-threaded hole 16 in the locking end 15 of the plate 13.

In a preferred arrangement of the first type in which the base 12 is attached firmly onto the mounting plate 13 and relies solely for rigidity on that attachment the side walls of the recess 22 are formed so that the recess tapers inwardly from the lower face of the portion 21. The locating end 14 of the plate 13 is formed with a similar taper. As the locking engagement is tightened the locating end 14 is drawn into the recess 22 by the inclined plane cam action between the locating end 14 which acts as a cam and the similarly inclined internal end wall of the

recess 22 which acts as a follower. Locking of the locating engagement and thus the locking engagement occurs when the sides of the locating end 14 engage the side walls of the recess 22.

In a further engagement (not shown) of the first type the locating end 14 is a clearance fit between the side walls of the recess 22. The depth of the recess 22 and length of the locating end 14 are such that locking of the locating engagement occurs when the end of the locating end 14 abuts the inner end of the recess 22.

In an arrangement of the second type in which the base 12 is locked firmly onto the surface of the body of the vehicle by its engagement with the mounting plate 13, the side walls of the recess 22 are substantially parallel to each other and the distance between them is such as to clear the width of the mounting plate 13; otherwise the parts are formed as in the arrangement of the first type.

The base 12 is fitted onto the mounting plate 13 as before and the locking engagement is formed as before. As the locking screw 24 is tightened the base 12 is urged towards the surface of the vehicle to which the mounting plate 13 is secured by the inclined plane cam action between the locating end 14 of the plate 13 and the inclined end wall of the recess 22. Locking occurs when the lower face of the base 12 firmly abuts the surface of the vehicle. A gasket (not shown) in the form of a rubber or plastics moulding is interposed between the lower face of the base 12 and the surface to protect the surface.

In the following description of other embodiments of the invention, parts which are similar to those of the previously described embodiment are denoted by the same reference numerals.

In the embodiment shown in figure 3 the locating end 14 of the mounting plate 13 is bent to form an obtuse angle with the middle portion of the plate 13 and is formed with a rectangular opening 25 which acts as a cam follower. Instead of the portion 21 in the end of the base 12, a tongue shaped member 26 is provided which acts as a cam. The tongue 26 is suitably secured to the base and directed downwards at an angle towards the end of the base opposite to the end where the skirt 20 is formed with the clearance hole 23 for the locking screw 24.

In an arrangement of the first type the tongue 26 tapers in width towards its free end and locking occurs when the locking screw is tightened enough to force the sides of the tongue 26 to engage the sides of the aperture 25.

In an arrangement of the second type the tongue 26 is formed with parallel sides and the width of the tongue 26 is such as to be a clearance fit between the sides of the opening

25. When the base 12 is fitted to the mounting plate 13 and the locking screw 24 is tightened, the inclined plane cam action between the tongue and the aperture is such that the base is urged towards the surface of the vehicle to which the plate 13 is secured and locking occurs when the lower face of the base 12 abuts the surface of the vehicle.

In an embodiment shown in figure 4, the locating end 14 of the plate 13 is formed with a circular opening 27. Instead of the tongue shaped member 26 of the embodiment shown in figure 3 the base 12 is provided for an arrangement of the first type, with a suitably supported, frusto-conical shaped peg 28. The base 12 is fitted onto the mounting plate 13 as before with the peg 28 inserted into the opening 27. The locking screw 24 is tightened and locking occurs when the peg 28 engages the opening 27.

In an arrangement of the second type (not shown) the peg 28 is cylindrical and inclined downwards towards the end of base 12 opposite to the end where the skirt 20 is formed with the hole 23 for the locking screw 24. The parts are arranged so that locking occurs when the lower face of the base abuts the surface of the vehicle.

The embodiment shown in figure 5 is an arrangement of the second type. The locating end 14 of the mounting plate 13 is bent to form an obtuse angle with the middle portion of the plate 13. The base 12 is formed at one end with a web 29 of tapering cross-section which extends between the two side portions of the skirt 20 at the lower face of the base 12, the angle between the two relatively inclined surfaces of the web 29 being complementary to that between the locating end 14 and the middle portion of the plate 13. At the other end of the base 12 the skirt 20 is formed with a screw-threaded hole 30. The locking screw 24 engages in the screw-threaded hole 30 and its inner end locates in a recess 31 formed in the locking end 15 of the plate 13. On the tightening of the screw 24 the web 29 becomes trapped between the locating end 14 and the surface of the vehicle which the lower face of the base 12 firmly abuts.

The embodiment shown in figure 6 has the skirt 20 inclined outwardly of the base. The mounting plate 13 is substantially similar to that employed in the embodiment shown in figures 1 and 2 except that the locking end 15 is also bent to form an acute angle with the middle portion of the plate 13. The locating end 14 engages a cylindrical peg 32 which is transversely mounted inside the base 12 and is secured at its ends to the side portions of the skirt 20.

In an arrangement of the first type the parts are such that the locking occurs when the sides of the locating end 14 engage the inside faces of the side portions of the skirt 20. In an arrangement of the second type the locating

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end 14 of the plate 13 is clearance fit between the side portions of the skirt 20.

The embodiment shown in figure 7 of the drawings is an arrangement of the first type and has the locating end 14 of the plate 13 bent to form a hook, the locking end 15 is joggled so that it is parallel to the middle portion of the plate 13 but is spaced from the surface of the vehicle to which the plate 13 is secured. The base 12 at one end is provided with a projection 33 which is secured to the inside face of the wall 19 and is formed with a toe portion 34 and an ankle portion 35. At the other end of the base 12 the locking screw 24 passes through a clearance hole 36 formed in the wall 19 and engages in the screw threaded hole 16 formed in the locking end 15 of the plate 13. The size and shape of the toe portion 34 and ankle portion 35 are such that locking occurs when the toe portion 34 engages the locating end 14 which is in the form of a hook, and the ankle portion 35 abuts the middle portion of the plate 13.

In a modification of the embodiments to be used as arrangements of the second type the axes of the locking screws 24 are arranged to be parallel to the plane along which the inclined plane cam action is to take place.

WHAT WE CLAIM IS:—

1. A rear view mirror comprising a base, which includes a skirt forming the periphery of the base, and a mounting member adapted to be secured wholly on the outside of a suitable surface of a vehicle, the base being arranged to house and to conceal substantially the mounting member within the skirt, attachment means being provided by which the base is adapted to be attached to the mounting member, the attachment means allowing of readily detachable mounting of the base on the mounting member and comprising a two part attachment between the base and the mounting member, the first part attachment providing in use locating engagement between the base and mounting member and the second part locking engagement between the base and mounting member, the locking of which also locks the locating engagement, the first part attachment being such that it prevents when engaged, removal of the base from the mounting member solely by relative movement between the base and the mounting member along a path substantially normal to the portion, adjacent the attachment, of the surface of the mounting member adapted to abut the surface of the vehicle or to a plane tangential to that portion.

2. A rear view mirror according to claim 1 wherein the locating engagement comprises interengaging formations on each of the base and the mounting member, the formations being rigid with whichever of the base and mounting member carries them.

3. A rear view mirror according to claim 1 or claim 2 in which the locking engagement is tightenable and such that tightening of the locking engagement causes relative movement between the base and the mounting member.

4. A rear view mirror according to any one of the preceding claims in which the arrangement of the attachment means is such that when both engagements of the attachment means are locked the base is attached to the mounting member and relies solely for support on that attachment.

5. A rear view mirror according to any one of claims 1 to 3 in which the arrangement of the attachment means is such that when the mounting member is secured to the surface of the vehicle and both engagements of the attachment means are locked the base abuts the surface of the vehicle to which the mounting member is secured or the adjacent surface of a gasket interposed between the base and the surface of the vehicle, the base being supported by that abutment and its attachment to the mounting member.

6. A rear view mirror according to any one of claims 3 to 5 in which the locating engagement comprises a cam and follower, the cam being provided on one of the base and mounting member and the follower being provided on the other, the arrangement being such that a component of the relative movement between the base and mounting member is translated by the cam and follower of the locating engagement to cause the base to move relative to the mounting member towards a position where the mounting member is substantially within the skirt of the base.

7. A rear view mirror according to claim 6 as dependent upon claim 4 in which locking of the locking engagement and thus of the locating engagement occurs when further movement of the base relative to the mounting member is prevented by the engagement of a part of the mounting member with the base.

8. A rear view mirror according to claim 6 as dependent upon claim 5 in which locking of the locking engagement and thus of the locating engagement occurs when the base abuts the surface of the vehicle.

9. A rear view mirror according to any of claims 6 to 8 in which the cam is formed with a plane surface.

10. A rear view mirror according to any preceding claim in which the locking engagement comprises a locking screw which engages in a screw-threaded hole formed in one of the base and the mounting member and has an abutting engagement with the other.

11. A rear view mirror according to claim 10 as dependent upon claim 9 and having an arrangement of the second type as defined in the body of the specification in which the

axis of the locking screw is parallel to the plane surface of the cam.

- 5 12. A rear view mirror according to any preceding claim in which the base is of elongate form, the locking engagement being provided at its one end and the locating engagement being provided wholly within that half of the length of the base which includes the other end.

- 10 13. A rear view mirror substantially as described herein with reference to and as illustrated by Figures 1 and 2 of the drawings.

- 15 14. A rear view mirror substantially as described herein with reference to and as illustrated by Figure 3 of the drawings.

- 15 15. A rear view mirror substantially as

described herein with reference to and as illustrated by Figure 4 of the drawings.

16. A rear view mirror substantially as described herein with reference to and as illustrated by Figure 5 of the drawings. 20

17. A rear view mirror substantially as described herein with reference to and as illustrated by Figure 6 of the drawings.

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